UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/574,267	03/31/2006	Yandapalli Durga Prasad	2761-0173PUS1	9048

2292 7590 05/10/2011

BIRCH STEWART KOLASCH & BIRCH
PO BOX 747
FALLS CHURCH, VA 22040-0747

EXAMINER	
STELLING, LUCAS A	

ART UNIT	PAPER NUMBER
1778	

NOTIFICATION DATE	DELIVERY MODE
05/10/2011	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

mailroom@bskb.com

Office Action Summary	Application No.	Applicant(s)	
	10/574,267	PRASAD, YANDAPALLI DURGA	
	Examiner	Art Unit	
	Lucas Stelling	1778	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *20 January 2011*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *93-118* is/are pending in the application.

4a) Of the above claim(s) *111-118* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☐ Claim(s) _____ is/are rejected.

7)☒ Claim(s) *93-110* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 1-20-11 has been entered.

Election/Restrictions

2. Claims 111-118 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected species, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 4-23-09. Accordingly, claims 93-110 are treated on the merits.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claim 107 rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Claim 107 recites the using "soluble alkaline earth silicate" to

form the copper silicate. However, only alkaline silicates are disclosed for the production of copper silicate. Accordingly there does not appear to be support for the step which uses an “alkaline earth silicate.” Since the claims are read to include the disclosed embodiments, alkali silicates such as sodium silicate will be treated as within the meaning of the term "alkaline earth silicate" for the purposes of conducting examination.

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 97-101 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

7. First, in claims 97 and 98 the terms “the cupric silicate i)," "the cupric silicate ii)," "the cupric silicate iii)," and "the cupric silicate iv)" are recited. However there is insufficient antecedent basis for these limitations in the claims. For purposes of examination it will be interpreted that claims 97 and 98 depend from claims 95 and 96 respectively.

8. In claims 97 and 98 it is unclear whether or not applicant intends for the different cupric silicates to be in the form of a Markush group, thereby further defining each cupric silicate if present, or whether claims 97 and 98 require all of the recited cupric silicates to be present together. For purposes of examination it will be interpreted that claims 97 and 98 refer to the cupric silicates in the alternative and therefore that the

further recited characteristics of the cupric silicate only are applicable if that species of copper silicate is present.

9. Claim 99 refers to further limitations of what constitutes the bacteria. Claim 99 depends from claim 93 which provides for protozoa, bacteria, fungi, and viruses in the alternative. However, it is not clear from claim 99 whether bacteria is required, or whether claim 99 limits the types of bacteria if present. For purposes of examination it will be interpreted to further define types of bacteria if present.

10. Claim 100 refers to further limitations of what constitutes protazoa. Claim 100 depends from claim 93 which provides for protozoa, bacteria, fungi, and viruses in the alternative However, it is not clear from claim 100 whether protozoa are required, or whether claim 100 limits the types of protozoa if present. For purposes of examination it will be interpreted to further define types of bacteria if present.

11. Claim 101 refers to further limitations of what constitutes fungi. Claim 101 depends from claim 93 which provides for protozoa, bacteria, fungi, and viruses in the alternative. However, it is not clear from claim 101 whether the fungi are required or whether claim 101 limits the types of fungi if present. For purposes of examination it will be interpreted to further define types of bacteria if present.

Claim Rejections - 35 USC § 102

12. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

13. Claims 93, 94, 99, 100, 102-106, and 108-110 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 3,888,683 to Horai, Jr. et al. ("Horai").

14. As to claim 93, Horai teaches a method of controlling microbes such as algae and fungi comprising contacting the microbes with a composition comprising crystalline cupric silicate having a silica to copper ratio in the range of 1:034 to 1:5.15 **(See Horai claim 1, and see col. 13 lines 15-20; dioptase is contemplated having a silica to copper ratio of 1:1; and since the compound is algicidal contact with it will cause a toxic effect on microbes such as algae and fungi; see claim 1 again)**.

15. As to claim 94, Horai teaches the method of claim 93, and Horai provides for immobilization of the composition **(See Horai col. 14 lines 42-66; the copper silicate is immobilized on the roofing tile)**.

16. As to claim 99, Horai teaches the method of claim 93, and since Horai does not contemplate the presence of bacteria, then the method of claim 99 is still deemed to be met by Horai since Horai contemplates treatment of fungi. Even assuming for the sake of argument that bacteria is ubiquitous and therefore some form of it will present, the recitation of both Gram positive and Gram negative bacteria covers all types of bacteria, and therefore fails to particularly limit the claim to a specific sub-set of bacteria.

17. As to claim 100, Horai teaches the method of claim 93, and since Horai does not contemplate the presence of protozoa, the method of claim 100 is still deemed to be met by Horai since Horai contemplates the treatment of fungi. The limitation of cryptosporidium is deemed to only require cryptosporidium if protozoa are present.

18. As to claim 102, Horai teaches a method of controlling microbes such as algae and fungi comprising contacting the microbes wit ha composition comprising copper silicate having a silica to copper ratio of 1:1 **(See Horai claim 1, and see col. 13 lines 15-20; dioptase is contemplated having a silica to copper ratio of 1:1; and since the compound is algicidal contact with it will cause a toxic effect on microbes such as algae and fungi; see claim 1 again)**.

19. As to claim 103, Horai teaches the method of claim 102, and Horai provides for immobilization of the composition **(See Horai col. 14 lines 42-66; the copper silicate is immobilized on the roofing tile)**.

20. As to claim 104, Horai teaches the method of claim 102, but Horai does not provide information regarding characteristic g values of electron spin resonance peaks or X-ray diffraction pattern peaks. However, these claim limitations are directed to intrinsic properties of the chemical composition and are not seen as separable from the composition. See MPEP 2112.01(II). As evidenced by applicant's disclosure, a copper silicate having a 1:1 silica to copper ratio will have g values of 3.1, 2.3, 2.0, 1.2, and 0.9 **(See instant specification page 40 lines 30-35)**, and x-ray diffraction peaks of 16.1, 32.2, and 39.7 having heights of 940, 764, and 694 respectively.

21. As to claim 105, Horai teaches the method of claim 94, and in Horai composition is immobilized on a roofing shingle which has a base of felt which contains cellulose **(See Horai col. 6 lines 25-40)**.

22. As to claim 106, Horai teaches the method of claim 102, and in Horai composition is immobilized on a roofing shingle which has a base of felt which contains cellulose **(See Horai col. 6 lines 25-40)**.

23. As to claim 108, Horai teaches a method for controlling microbes such as algae and fungi comprising contacting the microbes with a composition comprising crystalline copper silicate having a silica to copper ratio of 1:0.34 to 1:5.15 **(See Horai claim 1, and see col. 13 lines 15-20; dioptase is contemplated having a silica to copper ratio of 1:1; and since the compound is algicidal contact with it will cause a toxic effect on microbes such as algae and fungi; see claim 1 again)**.

24. As to claim 109, Horai teaches the method of claim 108, and Horai provides for immobilization of the composition **(See Horai col. 14 lines 42-66; the copper silicate is immobilized on the roofing tile)**.

25. As to claim 110, Horai teaches the method of claim 109, and in Horai composition is immobilized on a roofing shingle which has a base of felt which contains cellulose **(See Horai col. 6 lines 25-40)**.

Claim Rejections - 35 USC § 103

26. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

27. The factual inquiries set forth in *Graham* v. *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

28. Claims 95-98 and 107 are rejected under 35 U.S.C. 103(a) as being unpatentable over Horai in view of U.S. Patent No. 3,839,633 to Beschke ("Beschke").

29. As to claims 95 and 96, Horai teaches the method of claim 93, and Horai teaches the use of artificial copper silicates having varying silica to copper ratios **(See Horai col. 13 lines 15-20)**, but Horai does not mention a copper silicate with a silica to copper ratio of 1:5.15, 1:0.78, 1:0.53; or 1:0.34. Beschke is directed to a process for the production of copper silicates for anti-fouling paints and coatings **(See Beschke title abstract)**. Beschke teaches that the amount of copper loading is controllable and adjustable according variation in the process of production, for exmple by addition of acid or base **(See Beschke col.2 lines 50-68)**. With further reference to Horai, the copper silicate composition works by slowly leaching copper ions from the copper silicate **(See Horai e.g. col. 15 lines 2 -- col. 30)**. Therefore, a person having ordinary skill in the art at the time of invention would have recognized that the amount of copper in the copper silicate is a result effective variable which controls the amount of copper available for slow leaching over the life of the product **(See again Horai col. 15 lines 2-30)**. Accordingly, absent a showing of particular criticality, it would have been obvious to a person having

ordinary skill in the art at the time of invention to select one of the above numerated silica to copper ratios for use in Horai to optimize the copper to silica ratio for a given desired amount of leachable copper for an effective life of the product. *Discovery of an optimum value of a result effective variable in a known process is ordinarily within the skill in the art and would have been obvious, consult In re Boesch and Slaney (205 USPQ 215 (CCPA 1980)).*

30. As to claim 97 and 98, Horai teaches the methods of claim 95 and 96, and although Horai does not specifically mention silica to copper ratios of 1:5.15, 1:078, 1:0.53; and 1:034. Further Horai does not mention g-values and x-ray diffraction peaks as eumerated in claims 97 and 98. However, as discussed above with respect to claims 95 and 96, absent a showing of criticality, selection of these silica to copper ratios are deemed to be obvious as the product of routine experimentation and variable optimization. Furthermore, the claim limitation directed to the g values and x-ray diffraction peaks are directed to intrinsic properties of the chemical composition and are not seen as separable from the composition. See MPEP 2112.01(II). As evidenced by applicant's disclosure, a copper silicate having a silica to copper ratio of 1:5.15 will have g values of 4.3, 2.5, 2.3, 2.0 and 2.0 and x-ray diffraction peaks of 16.2, 32.2, and 39.7; a copper silicate having a silica to copper ratio of 1:0.78 will have g-values of 2.2 and 2.0 and x-ray diffraction peaks of 16, 32, and 39; a copper silicate having a silica to copper ratio of 1:0.53 will have g values of 2.1, 2.0, and 2.1 and X-ray diffraction peaks at 16.1, 32.2, and 39.71; and a copper silicate having a silica to copper ratio of 1:0.34

will have g values of 2.1 and 2.0 and x-ray diffraction peaks at 16.2, 32.2, and 39.7 **(See e.g. instant specification pages 38--43)**.

31. As to claim 107, Horai teaches the method of claim 93, and Horai contemplates using copper silica within the ratio of 1:0.3 to 1:5.15, and Horai explains that artificial copper silicates are used **(See Horai col. 13 lines 10-25)**, but Horai does not specify a method of making the artificial copper silicate comprising adding a solution of copper salt to a solution of soluble alkaline earth silicate to form a mixture, collecting the precipitate that forms; and washing the precipitate to obtain a curpic silicate composition. Beschke is directed to a method of forming a copper silicate for use as an anti-fouling coating or paint **(See Beschke title, abstract)**. Beschke teaches adding copper salt to an aqueous solution of alkali silicate **(See Beschke col. 2 lines 40-55)**, and then collecting the precipitate and drying it **(See Beschke col. 2 line 69-- col. 3 liens 5)**. Beschke explains that the method of producing the copper silicate facilitates adjusting the copper content by addition of acid or base **(See Bescke see col. 2 lines 50-62)**. Therefore, it would have been obvious to a person having ordinary skill in the art at the time of invention to produce the artificial copper silicate of Horai by a method of adding copper salt to an aqueous solution of alkali silicate, and then precipitating and washing the product in order to produce a copper silicate in which the copper content is adjustable as taught by Beschke.

32. Claim 101 is rejected under 35 U.S.C. 103(a) as being unpatentable over Horai in view of “Aspergillus fumigatus and Aspergillosis" Clinical Microbiology Reviews, Apr 1999, p. 310-350, Latge (“Latge”).

33. As to claim 101, Horai teaches the method of claim 93, and Horai contemplates that fungi are present and are treated by the copper silicate **(See e.g. Horai claim 1)**. But Horai does not mention that the fungi treated include one selected from the group of Sclertoium rolfsil, Rhizoctonia Solani, Fusarium oxysporium, Pyricularia oryzae, or Aspergillus. ”owever, Latage explains that Aspergillus is essentially a ubiquitous airborne fungus **(See Latge introduction)**. Therefore, it would have been obvious to a person having ordinary skill in the art at the time of invention to treat fungus including Aspergillus since Aspergillus is ubiquitous and airborne as taught by Latge.

Response to Arguments

34. Applicant's arguments filed 1-20-11 have been fully considered but they are not persuasive.

35. Applicant's arguments with respect to the new claims have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lucas Stelling whose telephone number is (571)270-3725. The examiner can normally be reached on Monday through Friday 9:00AM to 5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam Nguyen can be reached on 571-272-1342. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Lucas Stelling/
Examiner, Art Unit 1778